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EPA Superfund
Explanation of Significant Differences:

REVERE CHEMICAL CO.
EPA ID: PAD051395499
OU 03
NOCKAMIXON TOWNSHIP, PA
03/25/1997

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EXPLANATION OF SIGNIFICANT DIFFERENCES
OPERABLE UNIT ONE RECORD OF DECISION
REVERE CHEMICAL SUPERFUND, SITE

I. INTRODUCTION

Site Name: Revere Chemical Site ("Revere Site" or "Site")

Site Location: Nockamixon Township, Pennsylvania

Lead Agency: U.S. Environmental Protection Agency Region III
("EPA" or "the Agency")

Support Agency: Pennsylvania Department of Environmental Protection ("PADEP")

Statement of Purpose

The Record of Decision ("ROD") for operable Unit One ("OU1") of the Revere Chemical Superfund Site was signed on December 27, 1993. This Explanation of Significant Differences ("ESD") is being issued in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act as amended ("CERCLA"), 42 U.S.C. º 9617(c), and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), Section 300.435(c)(2)(i), and is now a part of the Administrative Record for the Site. The NCP requires the publication of an ESD when the differences in a remedial action significantly change, but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost. This ESD provides the public with an explanation of the changes made to the selected remedy for the treatment and containment of contaminated soil, and to demonstrate that the revised remedy complies with the statutory requirements of CERCLA º 121, 42 U.S.C. º 9621,

II. SUMMARY OF THE SITE HISTORY, SITE CONDITIONS, AND SELECTED REMEDY

The Revere Chemical Site is located on the southeast side of U.S. Route 611, north of Route 412 and south of Revere in Nockamixon Township, Bucks County, Pennsylvania. The Site is a former acid, metal and plating waste reclamation facility which had been in operation from 1963 to 1969. By court order, the facility was closed in 1969 for causing contamination of the tributaries to Rapp Creek. The company abandoned the Site in early 1970 leaving full and empty drums, waste filled lagoons, and piles of solid wastes.

During 1970 and 1971, the Pennsylvania Department of Health ("PADOH") performed a remedial action at the Site. Approximately 3.5 million gallons of wastes were removed. Pumpable sludges were also removed. The remaining sludges were stabilized with lime, sodium sulfide, and sodium sulfite, mixed with soil, and buried onsite in the process area lagoons. As a result of this remedial action, the 25-acre process area has been extensively disturbed. Drums were reported to have been crushed and buried in former lagoons in the process area during this action. In 1984, an EPA emergency team removed 22 drums of waste chromic acid and 30 cubic yards of sludge containing copper and chromium from the Site. On July 22, 1987, the Site was listed on the National Priorities List.

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In 1988, EPA executed a Consent Order with the potentially responsible parties ("PRPs") to conduct a Remedial Investigation and Feasibility Study ("RI/FS") at the Site. The RI is a study to determine the nature and extent of contaminants present at a site and the problems caused by their release. The FS is conducted to develop and evaluate options for the cleanup of a site.

In December 1991, the EPA issued an Administrative Order for removal response activities. The Respondents erected temporary soil erosion and sedimentation control structures, and conducted removal activities with regard to drums and soil staged onsite during Phase II RI operations. The Respondents completed the removal work in May 1992. The Phase II RI/FS reports were released on July 28, 1993. Soil on the Site had been found to be contaminated with heavy metals and organic compounds. Ground water in the shal1ow zone is contaminated with trichloroethylene, trichlorobenzene, and bis(2-ethylhexyl)phthalate. Copper, chromium and mercury have been detected in the stream sediment.

EPA's Regional Administrator selected the Remedial Action for contaminated soil, solid waste and miscellaneous debris on portions of the Site in the OU1 ROD signed on December 28, 1993. The major components of the selected remedy in the OU1 ROD are:

- Offsite disposal of solid waste and debris;

- Treatment of VOC-contaminated soil by vacuum extraction;
- Source containment by slurry wall;
- Source containment by capping;
- Fencing to limit access to capped areas;
- Site restoration by revegetation;
- Deed restrictions;
- Long-term ground water monitoring.

On December 1994, EPA issued an Administrative Order which required the PRPs to implement the OU1 ROD remedy. In January 1995, a group of Respondents, the Revere Steering Committee ("RSC"), notified EPA of their intent to comply with the Order to implement the remedy.

On December 11, 1995, the RSC submitted a request to EPA to reevaluate one of the criteria being used by EPA to determine the areal extent of the cap. Subsequent to that and in preparation for the remedial design, the RSC requested clarification on the intent of the OU1 ROD remedy with respect to Site Restoration. The clarification follows: Section IX.A.6.A. (Site Restoration) of the OU1 ROD is a description of the Site restoration component of the remedy. Site Restoration applies to the entire Site not just areas of the Site which require capping. Section IX.A.6.A. did not clarify that areas of the Site that are eroded, barren, or poorly vegetated due to historic Site activities will be revegetated to prevent further erosion and, hence, mitigate the future migration of soils that may adversely
impact the quality of the onsite tributaries. EPA does not consider this clarification a significant difference since one of the goals of the OU1 remedy is to prevent the migration of metals-contaminated soil from impacting the onsite tributaries.

In early January 1996, the RSC completed pre-design field investigations to delineate further the areas where soils contained organic chemicals above the remediation levels specified in the ROD. In addition, a pilot-scale test for in-situ vacuum extraction of the volatile organic chemicals("VOCs")
from the soil was conducted. The, results of this work were reported to EPA and PADEP in the Field Investigation Report, Slurry Wall/Vacuum, Extraction, Operable Unit One in June 1996 (referred to as the Pre-Design Study). Based on this work, the RSC revised the estimates of the volume of soil impart by VOCs and trichlorobenzene ("TCB") to approximately 750 cubic yards ("cy") or 1100 tons which was significantly less than the 26,350 cy (34;255 tons) used to evaluate remedial alternatives in the 1993 Feasibility Study for the Site. In addition, the pilot-scale vacuum extraction testing indicated that the ROD-specified remedy of in-situ vacuum extraction for VOCs in the soil was not very effective given the site-specific soil characteristics.

To confirm the most recent volume estimate reported in the Pre-Design Study, the RSC retained Advanced Geoservices to conduct a Focused Field Investigation ("FFI") in September 1996. The results of the FFI were submitted to EPA and PADEP in a report on January 17, 1997. Since the completion of the RI in 1993, twenty-five (25) soil samples from former collection basins AA and BB have been analyzed for TCB. The results of the FFI indicate that: 1) TCB is not currently found in Site soils in the vicinity of former collection basins AA and BB above the ROD remediation level, and therefore, a slurry wall is not necessary; and, 2) that 320 cy of soil is found above the ROD specified remediation level for VOCs in Site soils. Based on a conversion factor of 1.6 tons/cy, this corresponds to an estimated 510 tons of soil requiring treatment for VOCs.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

A. Criteria for Determining the Areal Extent of the Cap

The Revere OU1 ROD called for containment of contaminated soils by capping. The cap performance specifications are set forth in the Pennsylvania Residual Waste Regulations at 25 PA Code °° 288. 234, 288.236, 288.436, and Appendix A, Table II. These regulations, which are relevant and appropriate to capping of contaminated soils, require in part that the cover achieve a permeability of no less than 1 x 10 -7 cm/sec. The ROD establishes the following three criteria to determine which portions of the process area and spray fields at the Site must achieve this cap permeability requirement and thus provides the delineation of the areal extent of the cap:

1) Exposure to contaminated soils results in a Hazard Index greater than one (1);
2) Exposure to contaminated soils results in a carcinogenic risk greater than 1 X 10 -4; or

3) The Synthetic Precipitation Leaching Procedure ("SPLP") listed as EPA Method 1312 indicates the soils contain leachable contaminants that will result in contaminant levels above the method detection limits for those contaminants using drinking water analytical methods.

The last criterion, in particular the use of method detection limits as the acceptable ground water contaminant levels, is being changed in this ESD.

At the time the OU1 ROD was issued, no chemical specific applicable or relevant and appropriate requirements ("ARARs") existed for cleanup of the contaminated soil at the Site. The SPLP criterion Was developed to address the concern that contaminant concentrations in soil that did not represent an unacceptable risk from exposure (via dermal contact and inhalation), if left untreated or uncapped, could potentially leach contaminants into ground water at unacceptable levels.

To use the SPLP criterion to develop soil cleanup levels for the Site, acceptable contaminant concentrations had to be established for ground water. The Maximum Contaminant Levels ("MCLs") established under the Safe Drinking Water Act and set forth at 40 C.F.R. º 141.61(a) provide acceptable levels for exposure to hazardous substances in drinking water. Although Federal MCLs are an acceptable protection standard for ground water, PADEP determined, at that time, that the remedy for OU1 had to be consistent with the Department's Groundwater Protection Strategy ("GWPS"). According to this former policy, soils that are contaminated with hazardous substances must be remediated so that they do not impact ground water at levels above background or method detection limits. In order to determine cleanup levels for metals in soil, PADEP recommended the use of drinking water method detection 1imits when conducting the SPLP test on the contaminated soil.

Although the GWPS was not considered to be an ARAR for the OU1 ROD, EPA did accept the GWPS as a standard to be considered for the OU1 remedy. To-Be-Considered ("TBCs") standards are advisories or guidance issued, but not promulgated, by Federal or State governments that are not legally binding and do not have the status of ARARs. EPA may use TBCs along with ARARs as part of the site risk assessment and TBCs may be used in determining the necessary level of cleanup protection for human health and the environment. EPA incorporated method detection limits ("MDLs") into the SPLP criterion rather than MCLs to define the areal extent of Site soils that required capping. When EPA issued the OU1 ROD, soil cleanup levels at this Site were determined using health-based standards and the use of drinking water MDLs when conducting the soil leach test as opposed to using an ARAR standard.

Subsequent to EPA's issuance of the OU1 ROD, the Pennsylvania General Assembly passed. The Land Recycling and Remediation Standards Act ("Act 2") of May 19, 1995. Act 2 sets forth soil cleanup standards for contaminated sites in Pennsylvania. In accordance with PA Act 2, the criteria for protecting ground water from contaminated soil incorporated the use of MCLs instead of MDLs when conducting the SPLP test. Substituting MCLs for MDLs into the SPLP criterion is consistent with Section 303(b)(4)(ii) of Act 2. Accordingly EPA now considers MCLs to be the appropriate ground water protection goals to be used in the SPLP criterion rather than the method detection limits. The SPLP criterion in Section IX.A.4.A. on page 35 of the OU1 ROD is modified, therefore, to state "or when using the Synthetic Precipitation Leaching Procedure ("SPLP") listed as EPA Method 1312, the soils contain leachable contaminants that will leach to levels above the Maximum Contaminant Levels set forth in 40 C.F.R. º 141.61(a) for Site-related contaminants using Drinking Water Analytical methods." Based upon the implementation of Act 2, the PADEP concurs with the change from method detection limits to MCLs. Pre-design sampling has shown that this modification to the SPLP criterion will not significantly change the areal extent of the cap with regard to this criterion.

B. In-Situ Vacuum Extraction and Slurry Wall Components

Prior to construction of the cap, the OU1 ROD required:

1) treatment of Site soils with total VOC concentrations above 22.8 parts per million ("ppm") using in-situ vacuum extraction;

2) Installation of a subsurface slurry wall to contained soils contaminated with TCB above 4,437 ppm in the area of former collection basins AA and BB.

Based on the findings of the pre-design sampling, the pilot-scale test, and the FFI, EPA has determined that the following changes to the OUl ROD remedy are warranted.

1. Treatment of VOC-Contaminated Soil by Ex-situ vacuum Extraction

Vacuum Extraction (also known as soil vapor extraction) is an in-situ or ex-situ remedial technology in which VOCs are removed from soil by the application of a vacuum. The vacuum pulls air through the soil,

stripping the VOCs that are subsequently treated with emission control equipment. In-situ vacuum extraction involves placing extraction points or wells in the unsaturated soil. A vacuum is applied to the wells, inducing air flow toward the extraction wells. The flow of air through the subsurface causes the VOCs to desorb from the soil as vapors.

The OU1 ROD requires in-situ vacuum extraction of soils with total V0C concentrations above 22.8 ppm. As a result of the poor performance results for the in-situ vacuum extraction pilot-scale test and the significant decrease in the volume of the VOC-contaminated soil requiring treatment documented in the FFI, an evaluation of alternative technologies for treating the VOC-contaminated soil was initiated. The RSC submitted the Focused Feasibility Study ("FFS") Report to EPA and PADEP on January 17, 1997. The fo11owing technologies were evaluated: Low Temperature Thermal Treatment; Thermally Enhanced Ex-situ Vacuum Extraction; and Excavation and off-site Disposal. EPA encourages the public to refer to the FFI and FFS reports to gain a better understanding of the alternative technologies which were evaluated. These documents can be found in the Administrative Record File for the Site as noted in Section VI below.

EPA is changing Section IX.A.2.A. on page 33 of the OU1 ROD remedy to require ex-situ vacuum extraction as the treatment for soils with total VOC concentrations above 22.8 ppm rather than in-situ vacuum extraction. As detailed in the FFS, ex-situ vacuum extraction will require excavation of soils containing total VOCs above 22.8 ppm. The soil will be placed on the concrete pad that remains onsite from the demolition of the former Process Building. Pipes will be strategically placed within the soil as it is stockpiled to allow for injecting or extracting of air. The entire pile will be covered with an impermeable membrane which will minimize dust and VOC emissions. Heated air will be forced through the air injection piping and through the soil layers to cause the VOCs to vaporize. The heated air is recovered in the extraction piping. Extracted air is treated and then reinjected into the pile. It is expected that the ROD remediation levels for VOCs will be met following 2 to 4 weeks of treatment.

2. Elimination of Slurry Wall Requirement

Since current Site conditions indicate that TCB is not found in Site soils at concentrations greater than the ROD-specified remediation level of 4,437 ppm, the slurry wall described in Section IX.A.3.(Construction of slurry wall) on page 34 of the OU1 ROD will not be required. EPA does not consider this a significant change since the levels of TCB contamination found during the pre-design sampling and the FFI are below the cleanup levels set forth in the OU1 ROD.

Since these changes do not fundamentally alter the nature of the remedy for VOC-contaminated soils as outlined in the OU1 ROD, EPA has determined that a ROD amendment is not required. Vacuum extraction technology will still be used to treat the organic chemical hot spots in soil prior to installation of the cap. However, the soils will be treated above ground rather than in place. An added benefit of the ex-situ process is that if TCB is found above the ROD cleanup level, the thermally enhanced ex-situ vacuum extraction will also be effective in reducing the TCB concentrations to below the ROD specified cleanup level. Confirmation sampling of the treated soil will be conducted for VOCs and TCB concentrations and hazardous waste metals prior to backfilling.

IV. SUPPORT AGENCY REVIEW

PADEP asserts that Act 2, Section 303(b)(4)(ii) is an ARAR for purposes of this ESD. Under the National Contingency Plan EPA is not obligated to revisit a ROD for ARARs unless there is a new component or the remedy is not protective. Since neither is the case at this Site, this ESD will not revisit the issue of ARARs.

V. AFFIRMATION OF THE STATUTORY DETERMINATIONS

EPA has determined that the revised remedy complies with the statutory requirements of CERCLA º 121, 42 U.S.C. º 9621. Considering the changes that have been made to the scope of the selected remedy, the EPA and PADEP have determined that the remedy remains protective of human health and the environment, complies with Federal and State requirements that were identified in the OU1 ROD as applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

VI PUBLIC PARTICIPATION

This Explanation of Significant Difference is available in both the Administrative Record located at the U.S. EPA Region III Offices, 841 Chestnut Building, Philadelphia, Pennsylvania, 19107, and at the Site repository at the following location:

NocKamixon Township Building
Center Hill and Lake Warren Roads

Ferndale, Pennsylvania 18921
(610) 847-5058

Questions or comments on EPA's action and requests to review the, Administrative Record at EPA's office can be directed to:

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